CHAPTER 43

Vaginal Discharge

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One of the most common presenting complaints in a family physician's office is vaginal discharge. This symptom can represent a variety of infections ranging from relatively benign vaginal fungal infections to severe infections causing PID. The underlying cause of vaginal discharge can usually be determined by a patient's symptoms, visualization of the type and characteristics of the discharge, and the microscopic examination of the discharge. Other symptoms can be present in addition to the vaginal discharge. These include external genital itching or discomfort, bleeding after intercourse, painful intercourse (dyspareunia), pelvic or abdominal pain, fever, chills, sweats, nausea, and vomiting.

Patients describe vaginal discharge color and texture, if an odor is present with the discharge, and what type of odor (i.e., "fishy") and if it is causing other symptoms. Physical findings (Table 43-1) include a description of the discharge, any odor, if the discharge originates from the cervical opening or posterior vaginal vault, and the presence or absence of changes in the cervix or external genitalia. Testing on the discharge can include pH, "whiff test," and microscopic examination of the discharge using wet preparation and KOH.

BACTERIAL VAGINOSIS

Bacterial vaginosis occurs when the normal vaginal bacteria flora is replaced by a high concentration of anaerobic bacteria, usually *Gardnerella vaginalis*. This is the most common cause of vaginal discharge. In most women this is an annoying disease process, but in pregnant women it has been associated with adverse outcomes.

Symptoms

- Majority have no symptoms ++++
- Usually a malodorous (fishy) discharge +++
- Discharge is thin, homogeneous grayish white
- No external genitalia symptoms

Signs

- Discharge is homogeneous grayish white from vaginal vault ++++
- Discharge coats vaginal wall
- Cervix appears normal ++++

Table 43-1. Clinical Characteristics of Vaginal Discharges

	NORMAL	BACTERIAL VAGINOSIS	CANDIDIASIS	CHLAMYDIA/ GONORRHEA	PID	TRICHOMONIASIS
Symptoms	None, mild, transient	Malodorous, thin, homogeneous white discharge	Thick white discharge, external pruritus, no odor	Many with few or no symptoms	Pelvic or abdominal pain, fever, dyspareunia	Diffuse, malodorous discharge that may increase after menses
Signs	None	Discharge coats vaginal wall, cervix is normal	Inflamed external genitalia, cottage cheese–like discharge	Cervix appears inflamed and yellow cloudy discharge from cervix	Cervical motion tenderness, uterine/adnexal tenderness	Copious, yellow-green or gray, frothy discharge, inflamed cervix (strawberry)
Vaginal pH	3.0-4.5	>4.5	Normal	Normal	Normal	pH >5.0
Microscopic wet preparation	Squamous cells are prominent	Clue cells	Loss of bacteria	Increased WBCs	Increased WBCs	Increased WBCs, mobile trichomonads
KOH examination	Negative	Negative	Budding yeast or hyphae	Negative	Negative	Negative
"Whiff" test	Negative	Positive	Negative	Negative	Negative	Negative
Comments		DNA probe for *Gardnerella vaginalis* if diagnosis uncertain	Recurrent infections need to be assessed for other causes	NAAT test can be performed on endocervical or urine sample	CDC recommends treatment if one of the signs is present	Cultures only indicated if diagnosis is uncertain

CDC, Centers for Disease Control and Prevention; *KOH,* potassium hydroxide; *NAAT,* nucleic acid amplification test; *PID,* pelvic inflammatory disease; *WBCs,* white blood cells.

Workup

- Clue cells are present on microscopic examination. These are epithelial cells that are coated with bacteria. +++
- Vaginal pH is greater than 4.5 (normal pH is 3 to 4). ++++
- Positive whiff test—A fishy odor is released when KOH is added to the sample of the vaginal discharge ++++
- Culture of discharge is usually not necessary.
- If diagnosis is in doubt, DNA probe for *Gardnerella vaginalis* can be performed.
- If three of four are present, meets Amstel's criteria for bacterial vaginosis ++++

Comments and Treatment Considerations

The CDC has recommended various treatment regimens. Treatment options include oral and intravaginal regimens that have been proven to provide equal cure rates. Recommended regimens include metronidazole 500 mg orally twice per day for 7 days, metronidazole gel 0.75%, one applicator intravaginally once per day for 5 days, or clindamycin cream 2%, one applicator intravaginally at bedtime for 7 days. Clindamycin cream is oil based and could weaken latex condoms or diaphragms.

Alternative regimens include metronidazole 2 g orally in a one-time dose, clindamycin 300 mg orally twice per day for 7 days, or clindamycin ovules 100 g intravaginally once at bedtime for 3 days. Bacterial vaginosis has been associated with premature rupture of membranes, preterm labor, preterm birth, and postpartum endometritis. Treatment of all pregnant women with bacterial vaginosis has had inconsistent results in reducing these adverse events. Current CDC guidelines recommend that women who are at high risk for preterm delivery (i.e., prior preterm delivery) should be treated. Metronidazole and clindamycin can be used during pregnancy.

CANDIDIASIS

Vulvovaginal candidiasis is one of the most common causes of vaginitis. The usual etiology is *Candida albicans* but can also be caused by *C. tropicalis* or *C. glabrata*. Risk factors for developing this infection include recent antibiotic use, diabetes mellitus, pregnancy, oral contraception use, receptive oral sex, or a sexual partner with candidiasis.

Symptoms (see Table 43-1)

- Thick white discharge
- No odor
- Intense external and internal genitalia pruritus distinguishes this from other discharges. +++

Signs

- External genitalia is red, inflamed, and edematous.
- Odorless, thick cottage cheese–appearing discharge in vaginal vault
- Cervix is normal ++++

Workup
- Discharge pH is 4.0 to 4.5 ++++
- Examining secretions after adding potassium hydroxide shows budding yeast or hyphae. ++++
- Recurrent candidiasis infections need to be evaluated for other causes such as diabetes mellitus and HIV infection.

Comments and Treatment Considerations
Many effective antifungal treatments are available OTC. In cases that may be resistant terconazole (Terazol) 0.8 or 0.4% vaginal cream in a 3- or 7-day course respectively can be used. One oral treatment regimen is available using fluconazole (Diflucan) 150 mg in one dose.

Both intravaginal and oral treatment regimens have similar cure rates. The oral regimen has more adverse effects. In complicated cases of vulvovaginitis the treatment regimen my need to be expanded to 10 to 14 days for the vaginal preparations. If oral treatment is used, a fluconazole dose can be repeated in 3 days.

CHLAMYDIA AND GONORRHEA CERVICITIS

Infections with *Chlamydia trachomatis* and *Neisseria gonorrhoeae* are the most common sexually transmitted infections. These infections can cause few or no symptoms but also can cause significant infection resulting in PID (see Table 43-1).

Symptoms
- Vaginal discharge +++
- Dysuria
- Abnormal vaginal bleeding
- Pelvic or abdominal pain ++
- Pleuritic right upper quadrant abdominal pain +

Signs
- Cervix appears inflamed (chlamydia and gonorrhea) +++
- Yellow or cloudy discharge from the cervix (chlamydia and gonorrhea) +++
- Cervix may be friable and bleed easily (chlamydia)
- No vaginitis present (chlamydia and gonorrhea)
- Cervix may appear normal (gonorrhea)

Workup
- Nucleic acid amplification test available for both ++++
- Can be performed on either endocervical or urine sample
- Culture can be performed but is difficult to transport

Comments and Treatment Considerations: Chlamydia
- Azithromycin 1 g orally in a single dose
- Doxycycline 100 mg orally twice daily for 7 days
- Both are equally effective.

Alternative Treatment: Chlamydia

- Erythromycin base 500 mg orally four times daily for 7 days
- Erythromycin ethylsuccinate 800 mg orally four times daily for 7 days
- Ofloxacin 300 mg orally twice daily for 7 days
- Levofloxacin 500 mg orally once daily for 7 days

Comments and Treatment Considerations: Gonorrhea

- Cefixime 400 mg orally as a single dose
- Ceftriaxone 125 mg IM as a single dose
- Ciprofloxacin 500 mg orally as a single dose*
- Levofloxacin 250 mg orally as a single dose*
- Ofloxacin 500 mg orally as a single dose*

PELVIC INFLAMMATORY DISEASE

Women who have infections in the lower genital tract may develop an ascending infection that causes acute inflammation in the fallopian tubes or endometrium called pelvic inflammatory disease. Symptoms can vary and usually develop during menses or during the first 2 weeks of the cycle (see Table 43-1). Women who develop PID are at higher risk for infertility.

Symptoms

- Vaginal discharge +++
- Pelvic pain +++
- Abdominal pain ++
- Intramenstrual bleeding
- Fever, chills, sweats ++
- Nausea/vomiting
- Dyspareunia (painful sexual intercourse)

Signs

- Cervical motion tenderness +++
- Uterine/adnexal tenderness +++
- Abnormal cervical discharge
- Oral temperature greater than 101° F (>38.3° C) ++
- Abdominal tenderness +++

Workup

- PID is primarily a clinical diagnosis and no specific tests are required.
- CRP is elevated ++++
- Sedimentation rate is elevated +++
- Saline preparation of vaginal secretions shows significant WBCs

*These antibiotics should not be used in individuals who live in Asia, the Pacific Islands, or in California or may have contracted the infection while visiting these areas. Also they should not be used during pregnancy or in men who have sex with men.

- CBC; elevated WBCs
- Nucleic acid amplification tests for chlamydia and gonorrhea +++
- Endometrial biopsy, transvaginal ultrasound, MRI, or pelvic laparoscopy indicated if diagnosis is uncertain or pelvic abscess may be present

Comments and Treatment Considerations

Hospitalization for IV therapy if any of the following criteria present:

- Unresponsive to oral antibiotic therapy
- Pregnancy
- Severe illness (i.e., vomiting, nausea, high fever)
- Unable to follow-up as an outpatient
- Surgical emergencies cannot be excluded.
- Tubo-ovarian abscess present
- Oral and parenteral treatment regimens are equally effective.

Combined Parenteral/Oral Regimen (Treatment for 14 Days)

- Ceftriaxone 250 mg IM once or cefoxitin 2 g IM plus probenecid 1 g PO in a single dose concurrently plus doxycycline 100 mg PO twice daily for 14 days
- Metronidazole 500 mg orally twice daily for 14 days (consider adding to regimen if clinically indicated)

Parenteral Regimen

- Cefotetan 2 g IV every 12 hours
  or
- Cefoxitin 2 g IV every 6 hours
  and
- Doxycycline 100 mg IV or orally every 12 hours
- Change to oral regimen when clinically stable
- Doxycycline should be given orally as soon as possible because the IV form can cause sclerosis of the vein.

TRICHOMONIASIS

Trichomoniasis is caused by the protozoan *Trichomonas vaginalis* and is considered a sexually transmitted infection. The incubation period is 3 to 21 days after exposure. Because of pH changes around menses, women are more susceptible to this infection during this portion of their cycle (see Table 43-1).

Symptoms

- Most have no symptoms +++
- Diffuse malodorous vaginal discharge
- Vaginal soreness
- Dyspareunia
- Vaginal discharge may increase immediately after menses.

Signs
- Copious vaginal discharge
- Discharge is yellow-green or gray, frothy, and malodorous
- Cervix may be inflamed and have a "strawberry" appearance

Workup
- Vaginal pH 5 or greater +++
- Mobile trichomonads visible on microscopic examination of vaginal discharge +++
- Microscopic examination: 10 WBCs per high-power field ++++
- Cultures only indicated if diagnosis is uncertain

Comments and Treatment Considerations
- Metronidazole 2 g orally in a single dose
- Alternative is metronidazole 500 mg orally twice daily for 7 days
- If persists or recurs use metronidazole 500 mg orally twice daily for 5 days
- Treatment failures should be given metronidazole 2 g orally once daily for 3 days.
- It is important to treat the sexual partner as well.

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